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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,412	05/18/2005	Yuki Masuda	123929	6007

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EXAMINER	
HO, ANTHONY	
ART UNIT	**PAPER NUMBER**
2815	

MAIL DATE	DELIVERY MODE
06/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/535,412	MASUDA ET AL.	
	Examiner	Art Unit	
	Anthony Ho	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/18/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on May 18, 2005 was filed after the mailing date of the instant application on May 18, 2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

The disclosure is objected to because of the following informalities: Please claim foreign priority in the beginning of the application.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Waratani et al (JP 08-191162).

In re claims 1 and 2, Waratani et al discloses a field-effect transistor comprising: a gate electrode (18, 22) formed at one side of a base substrate (21); a source electrode (14,

24) formed at the one side of the base substrate; a drain electrode (15, 25) formed at the one side of the base substrate; an insulation layer (19) formed between the gate electrode and the source electrode and between the gate electrode and the drain electrode; an organic semiconductor layer (16, 26) formed around the source electrode and the drain electrode; and a reformed layer (13) attached between the insulation layer and the organic semiconductor layer and containing a compound having the CN group in a molecule/composed of only a compound having the CN group in a molecule (Abstract; paragraphs 0064, 0077; Drawing 1).

In re claims 5 and 6, Waratani et al discloses the concentration of the compound having the CN group in a molecule contained in the reformed layer is less than 50 percent mass (paragraphs 0058 – 0063) and the thickness of the reformed layer is 0.5 to 500 nm (inherently – due to the characteristics of the device).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-4, 7-8, and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waratani et al (JP 08-191162) as applied to claims 1 and 2 above, and further in view of Yamada (JP 06-180456).

In re claims 3-4 and 10-11, Waratani et al, has been discussed above, but does not disclose the compound 2-cyanoethyltriethoxy silane.

However, Yamada discloses the compound 2-cyanoethyltriethoxy silane used in a thin film transistor for a liquid crystal display device (paragraph 0013).

The advantage is to improve the characteristics of the semiconductor device (Abstract; paragraph 0009).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the field effect transistor as taught by Waratani et al with the compound 2-cyanoethyltriethoxy silane used in a thin film transistor for a liquid crystal display device as taught by Yamada in order to improve the characteristics of the semiconductor device.

In re claims 7-8 and 12-13, Waratani et al, has been discussed above, but does not disclose the $C_{max} \leq C_{min} \times 2$; and the curve of the rate of change of the drain current obtained from the drain current-time characteristic has a local extreme value, the first derivative is substantially positive, or the rate of change exceeds 1 when 10 seconds elapse after the gate voltage is applied.

However, since Yamada discloses the compound 2-cyanoethyltriethoxy silane used in a thin film transistor for a liquid crystal display device (paragraph 0013), the above characteristics will be inherently obtained, due to the fact that the compound 2-cyanoethyltriethoxy silane is used in semiconductor devices to improve its characteristics (Abstract; paragraph 0009).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the field effect transistor as taught by Waratani et al with the compound 2-cyanoethyltriethoxy silane used in a thin film transistor for a liquid crystal display device as taught by Yamada to inherently obtain the characteristics $C_{max} \leq C_{min} \times 2$; and the curve of the rate of change of the drain current obtained from the drain current-time characteristic has a local extreme value, the first derivative is substantially positive, or the rate of change exceeds 1 when 10 seconds elapse after the gate voltage is applied since the compound 2-cyanoethyltriethoxy silane is used in semiconductor devices to improve its characteristics.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Waratani et al (JP 08-191162) as applied to claim 2 above, and further in view of Matsuzawa et al (JP 09-167764).

Waratani et al, has been discussed above in the rejection of claim 2, but does not disclose a hydroxyl group is introduced to the surface layer of the insulation layer.

However, Matsuzawa et al discloses hydroxylating the surface of a SiO_2 film, then applying a silane coupling agen (Abstract; paragraphs 0009 – 0018).

The advantage is to stabilize the insulating film for a long-term period without creating any voids (paragraph 0008; Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the field effect transistor as taught by Waratani et al with a hydroxyl group is introduced to the surface layer of the insulation layer as

taught by Matsuzawa et al in order to stabilize the insulating film for a long term period without creating any voids.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Veres et al (US PUB 2005/0104058) discloses an organic field effect transistor with an organic dielectric. Fukui (US PUB 2005/0045876) discloses thin film field effect transistor and making method. Yoshida (US PUB 2003/0071259) discloses electrically conductive organic compound and electronic device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Ho whose telephone number is 571-270-1432. The examiner can normally be reached on M-Th: 8:30AM-7:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AH
April 26, 2007

JEROME JACKSON
PRIMARY EXAMINER